The Global Universal Profiling System (GUPS)

Author: Sara Summers

Key Words: Partner, Collaborative, Research, Global Climate

The subject of the poster is the Global Universal Profiling System (GUPS), a long-term global observing system proposed by NOAA's Forecast Systems Laboratory (FSL) in Boulder, Colorado. GUPS will provide better trends and fingerprints of global climate change by measuring detailed profiles of the atmosphere and oceans at 240 equally spaced, fixed locations over oceans and polar regions, where the greatest data deficit are. The system would use autonomous air vehicles in the lower stratosphere to drop sondes every 72 hours to measure the meteorological parameters; buoys in the ocean to report surface and subsurface data; and instruments on board the planes to measure those constituents migrating into and out of the United States, such as aerosols, trace gases, global warming pollutants, ozone, and water vapor, among others. It would be designed to complement planned satellite and surface systems, would address unresolved climate change questions, and would provide data that can be used to improve long-term climate models.

The network needs to be a collaborative effort designed, developed, and operated by a consortium of nations. FSL is interested in developing partnerships with other agencies and research institutions interested in global climate change research and the international transport of air pollutants. It was with this in mind that Sara Summers, a Region 8 meteorologist, was asked by FSL to assist in developing an EPA/NOAA working relationship with GUPS, and is doing so via a part-time Inter-Agency Agreement. FSL is currently in the process of developing a proposed list of instruments to put on board the planes to monitor the atmosphere's chemical constituents and is soliciting input from other agencies. The instruments can be tailored to an agency strategic goal or a research institute's specific interest; for example, to determine concentrations of EPA criteria pollutants migrating into or out of the U.S.; concentrations of global warming pollutants such as carbon dioxide or methane; or concentrations of mercury per the Clear Skies Initiative. This is a great opportunity for EPA and others in the research community to partner in a global climate change research project.

Contact Information: Sara Summers
Meteorologist
EPA Region 8 and NOAA's Forecast Systems Laboratory
EPA: (303) 312-6318
NOAA: (303) 497-4221
summers.sara@epa.gov